Mobilizing Relational Theory of Space to Inform New Climate Imaginaries[1]

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> "It is clearly difficult, if not impossible, to fight for deep systemic changes if we cannot first imagine them – and the larger the systems-level change required, the more critical it is to engage society's full collective radical imagination to envision it." (Trott et al. 2022, p. 235)

Bauhaus Earth

By now, most of us are well aware of how the extraction and combustion of fossil fuels and the associated emission of greenhouse gasses results in the warming of the atmosphere. It is only very recently however, that we have come to acknowledge that the global building sector – the industrial activity and infrastructural artifacts associated with the materialization, operation, and disposal of our constructed environments – is responsible for a significant share of anthropogenic impacts that have brought us to this critical juncture in the story of our own species and the other organisms that inhabit the planet with us. Since the birth of the industrial revolution, the accelerating urbanization of the planet and corresponding consumption of planetary resources has steadily degraded the Earth's natural systems. Conservative measurements across the building life cycle show the construction sector's emissions of carbon dioxide and its equivalents represent about 42 percent of the annual anthropogenic contributions to climate change (GABC 2019). The production phase within that life cycle consumes 84 percent of all minerals excavated by the global mining industry, and produces 71 percent of waste (Purchase 2021). With 2.5 billion additional people slated to inhabit global cities by 2050, the environmental

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consequences of our business-as-usual means, methods, and materials of producing buildings and infrastructure will grow in direct proportion to our consumption of the raw material and energy required to meet the massive demand for housing alone. By mid-century, this anticipated boom in building will have devoured more than three-quarters of our remaining terrestrial carbon budget. Meanwhile, given our recent record, it seems likely that other critical objectives of sustainability – promoting social equity, environmental restoration, and economic feasibility – will remain largely unaddressed.

Several years ago, I began a three-year sabbatical from my teaching obligations at TU Berlin to establish *Bauhaus Earth* as a multidisciplinary initiative. The goal was to consider pragmatically how an overhaul of the materials, means, and methods with which we construct the buildings and infrastructure that comprise human settlement can prevent climatic and terrestrial catastrophe. This meant the reformation and re-materialization of construction: the physical artifacts that comprise it, the reconfiguration of the socioeconomic structures that underpin it, and the reengagement of the geographical regions that might sustainably supply it. Can we consider the unprecedented convergence of environmental and social crises as a powerful opportunity for systemic change: to escape the defeatist and preservationist approach of "saving what we have?" What if we refuse to flatten out complexities for the sake of either administrative "legibility," (Scott 1998) or market-based technocratic solutions? The goal of *Bauhaus Earth* is to develop a counterfactual scenario for the future of our built environment. Might the activities and artifacts of the global building sector serve as a force for ecosystemic repair and climate restoration, rather than one of predation and waste?

Crisis of imagination

How to start? It was clear to us that abstract climate science, technocratic language of carbon flows, and doomsday scenarios of a seemingly inevitable dark future has begun to numb and turn off those in the building world we were seeking to motivate. Shortcomings and needs of today, such as affordable housing and access to infrastructure, dominates political agendas, rather than the difficult-to-comprehend crisis of a planetary system out of sync, requiring a new multigenerational effort of repair. The climate emergency has been described as a "crisis of imagination" (Gosh 2016), mainly referring to a breakdown in our ability to grasp the scale, complexity, and true ramifications of our effects on the global climate. The crisis is an inability to grasp the link between our social worlds and the worlds of objects, materials and natural systems, an inability to imagine a more positive, hopeful future. To speak of an *imaginary* is to speak of shared visions that enable collective action: our dreams of a good future, but also our role in the process of attaining that future. "To imagine

is to think about possibilities other than possible, times other than now, and places other than here," write Simin Davoudi and Ruth Machen (2021, p. 3). For *Bauhaus Earth*, it became clear that building a new climate imaginary had to begin with a search for language and way of thinking that could help construct a more motivating narrative of change.

In the following, I would like to explain how Martina Löw's relational theory of space (2016) became a productive starting point and conceptual toolset in this endeavour. Löw's assumption that space emerges in the interplay between objects, structures and actions served as an inspiration towards a language in which the human and natural worlds of materials and planetary systems are considered equally and help us imagine better outcomes. Taking a theoretical system into practice and policy was also a deeply personal motivation, one seeking to make sense between two worlds: my academic life as part of the CRC "Refiguration of Space" and simultaneously working for an impact- and action-oriented, not-for-profit think tank and lab. In hindsight, I realize how leaving the protected ground of working within the academic system to enter the messier business of formulating assertions and normative frameworks, taking stances, deliberately reducing complexity but struggling with accessible language for a broader audience is not without risk. This departure however can also generate necessary critical outside perspectives to recognize the practical limits and conceptual constraints of academic theory.

The writing of *Bauhaus Earth*'s founding manifesto, *Towards Re-Entanglement: A Charter for the City and the Earth*[2] (Organschi and Misselwitz 2024) – hereafter referred to as "Charter" – became an experiment to use diagnostic tools borrowed from Relational Space Theory (Löw 2016). These tools were a starting point for the development of a climate imaginary which served as a practical utopia and set of guiding principles for a built environment within planetary boundaries. In the following, I would like to briefly describe the background, process and outcomes of the Charter writing and finally, offer some insights and conclusions from this experience as a constructive critique to Löw's Relational Theory of Space.

Building blocks for a territorial climate imaginary

The Charter is the outcome of a series of online conversations between a group of interdisciplinary and crosscultural thinkers and makers from around the world –

2 Towards Re-Entanglement: A Charter for the City and the Earth – Lead authors: Alan Organschi, Philipp Misselwitz; Co-authors: Ana María Durán Calisto, Andrea Gebhard, Cade Deihm, Edgar Pieterse, Franziska Schreiber, Guiseppe Scarascia Mugnozza, Hans Joachim Schellnhuber, James Drinkwater, Marlène de Saussure, Marc Palahí, Monica Tanuhandaru, Nathalie Jean-Baptiste, Rocío Armillas Tiseyra, Tilmann Prinz, Vicente Guallart, Vyjayanthi V. Rao

scientists, architects, spatial planners, and policy makers – who also served as its initial signatories. As discussions began – mostly virtually or via email exchanges among an interdisciplinary group that had never convened before – we began debating the purpose of the words we were using, as well as the concepts underpinning them. In the group, we quickly acknowledged the value of a unified language, as well as quantifiable and measurable indicators in aligning global political actors, structuring multilateral processes, and pushing back against the "fuzzy" quality of many contemporary debates. We also shared a deep sense of collective frustration with the semantic uniformity and repetitiveness of technocratic language, as well as the alarmist quality of an exponentially growing number of reports, agendas, work programs, and action-oriented documents seeking to address the climate emergency. We agreed that language itself seems to lock us in – reinforcing certain ways of thinking that confine us in our disciplinary bubbles, encourage sectoral techno-fixes, and often blind us from the overwhelming urgency and complexity of the current crisis. A "good future" must be more than the mere accomplishment of sectoral aims! On reflection, we were left with the question: How can we be firm, precise, and acknowledge the need for urgent action, while also recognizing that simply aiming at the fulfillment of all sector-related targets – dressed in technocratic, actionable language – is not enough? What could an alternative be?

Research into transformation-to-sustainability processes has focused, in part, on the role of what have been called s*ocio-technical imaginaries*, or "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" (Jasanoff and Kim 2015, p. 4). Imaginaries are performative, and they are powerful: as they shape public opinion, they catalyze policy and inform the allocation of resources. Even those limited, sectoral approaches to transformation tend to be anchored in implicit collective understandings of the way the world functions.

This spirit became a key driver as our Charter and its twelve principles began to take form in the spring of 2022: to produce a motivating and guiding narrative that helps us embark on the challenging journey that lies ahead of us. As we work on effecting deep systemic changes, we also need to develop imaginaries of a better future beyond the climate emergency, ones that inspire collective action through a clear articulation of the kind of future we might actually *want* to live in.

Entanglement

The Charter deliberately begins with an acknowledgement of the disturbed relationship between humans and nature as the fundamental cause of our crisis. Its first principle is a call to "invest in nature":

> "[…] Nature is the existential infrastructure of life on Earth – including human life – and the only solution to heal the planetary crisis. We must seek out, learn from, and invest in the profound intelligence and enduring lessons that a healthy biosphere can offer us. There can be no investment in cities – whether intellectual, spiritual, political, social, or economic – without a corresponding, coordinated, and continually renewed investment in the natural systems that surround and suffuse them… Eco-systemic well-being, which includes humanity but is not limited to our species, must be understood as a basic right of all citizens and the organisms that contribute to the health of our terrestrial metabolism." (Organschi and Misselwitz 2024)

Entanglement here refers to the interconnectedness between natural and anthropogenic systems, of scales, of timelines. Overlapping, contingent, and continuously evolving systems are bound not by administrative lines on a map, but by the extents of their spheres of influence. Our own "home" region, for instance – the Berlin-Brandenburg area – is a case study in the capriciousness of administrative boundaries. Once divided by a set of hard geopolitical borders into West and East, the Berlin-Brandenburg metropolitan area is (and always has been) much more than that. It is a set of overlapping spaces, more or less disturbed landscapes that produce and are, in turn, produced by a specific economic and cultural context.

Löw's (2016) sociological theory of space, which considers space as emerging in an interplay between material and imaginary processes, and as decidedly relational is a conceptual ground from which to conceptualize these entanglements. While the aspect of "spacing" refers to the relational arrangement of things and people, the "operation of synthesis" emphasizes the processes of perception, imagination, and memory in the formation of spaces. However, Löw at this point limits her analysis to acting human beings. To think through and address the rapturous relation between humans and natural earth systems including the materials, their origins, and flows requirements in the built environment, the spatial thinking should integrate a more-than-human approach. The notion of entanglement here draws on the work of other scholars such as Donna Haraway's call to "make kin": to imagine ourselves as inextricably linked to the other human and non-human inhabitants of this Earth and to the Earth itself. Our kinship with the other inhabitants of this planet erases the distinctions between forms of justice: climate justice is social justice, and social justice is climate justice. Just as technocratic projects that ignore social realities only exacerbate underlying issues, territorial-scale planning or design projects that fail to account for the significance of embedded and historical power dynamics will only reinforce them (Yarina 2018).

Many signatories strongly emphasized the importance of including non-Western and/or so-called "Global South" voices in these debates. Architect Ana María Durán Calisto, for instance, uses the example of the Amazon to illustrate the deep

relevance of Indigenous Amazonian ontologies, in which sustainability and human welfare are fundamentally compatible with today's world. In her work, she questions the myth of the Amazon as a primitive "pristine wilderness", separated in all ways from the urban realm and from modernity in general. Rather, she shows the extent to which the Amazon has *always* been urbanized, deeply shaped by human habitation over millennia. Understanding the Amazon in this way calls into question the assumptions many of us carry about the very definition of the "urban", potentially opening space for more creative and radical thinking, in which our entanglement with nature is a basic assumption that underlies all decision-making. Trusting traditional and Indigenous knowledge means enabling the holders of this expertise to speak, however. It is not enough to just say that someone is included: what does inclusion in a political process really look like? The call to take these embedded power dynamics seriously enables projects to move out of the realm of what Erik Swyngedouw refers to as the "post-political" (2011), and into a space in which viable alternative (political and climate) imaginaries can be nurtured and developed.

Spatial Territory

What is the appropriate spatial arena to initiate change? A key element of theory building within the CRC is the empirical identification of qualitative features of spatial refiguration such as new emerging spatial arrangements – Löw's "spatial figures" (Löw and Knoblauch 2021) that could help us to understand unfolding societal changes. In this construct, four ideal-typical forms of spatialization can be distinguished, resulting in four spatial figures: Territory, Network, Place, and Route. While Network, Place and Route represent new complexities in the constitution of space which is increasingly becoming polycontextural, with increasing number of different but simultaneous spatial references impacting our actions, Territory is understood and used in the CRC as a figure for a "container" for the deployment of state power (Agnew 1994), linked to specific political jurisdictions, such as nation states or administrative boundaries of cities.

When searching for a concept of space through which new climate imaginaries and actions could emerge, this understanding of Territory which is deeply rooted in modernism, was a useful starting point to reflect how anthropocentric cities emerged as antagonists to the surrounding landscapes, while fueling the ignorance with which our urban-centered extractive economies draw on cheap and "endlessly available" nature. But the discussions in the Charter writing process also took us to other understandings and modalities of Territory, not rooted in the Western tradition which we considered more productive and potentially transformative.

The Charter argues that addressing the crisis of the anthropocene would require a fundamental shift in our understanding of Territory towards "spatial territory"

that could help incorporate the complex, systemic flows and dependencies on materials, resources, humans, and non-human species constituting our habitats. Instead of seeing city and countryside as opposites, human settlement spaces of a post-anthropogenic future must be understood as part of the ecosystems that surround and permeate them. We are embedded in and depend on spatial systems with (limited) available material resources.

When spatial territory is understood as a geographically anchored, dynamic network of agents and activities – rather than a "container" – it could become a powerful and flexible framework for action. It could help to embrace complexity, rather than flattening it out for legibility. This opens the way for a new approach to the materials with which we will house the world's exploding urban population: thinking across urban-rural binaries opens up new possibilities to re-regionalize material flows and value chains. When we prioritize bio-based products over extractive materials, we unlock tremendous potentials for decarbonization, and even carbon storage. The health of the entire urban-rural landscape (not just a city), including all the human and non-human species that inhabit it, should be fundamental criteria in urban planning and development decisions. In particular, an expanded understanding of territory creates space for indigenous and non-Western epistemologies. An expanded understanding of spatial territory could enable us to account for the places that are currently disenfranchised by our city-centric political and economic systems.

Regenerativity

Out of this expanded understanding of spatial territory as the basic framework for action, the Charter proposes the concept of the *regenerative landscape* as the building block of a climate imaginary that is positive, action-oriented, and inclusive. Instead of continuously extracting resources from this system (extractivism) and polluting it with waste, our actions must be directed towards making a positive or "regenerative" contribution. Regenerative landscapes are entangled territories. They are complex, multidimensional systems of systems with shifting and amorphous edges, what Donna Haraway might refer to as "tentacular" (2016). Regenerative landscapes and territories don't flatten out complexity: in their beautiful messiness they represent a state of rich entanglement and a potential answer to the "[…] crisis of imagination [which] is intricately connected to a destabilization of the modernist and enlightenment tenets that have shaped our relationship with the world." (Machen et al. 2023, p. 1)

Moreover, the concept of regenerativity enables concrete, practical action. When we acknowledge that we live in a closed system – as Bruno Latour so poignantly stated, "there is no outside anymore" (2008), no other planet to escape to – we must think quite pragmatically about how to use the limited resources we have.

More to the point, we must question the ontological underpinnings of our use of living and nonliving materials, and our habitual reliance on externalities to justify catastrophic decisions. It is not enough to pass laws mandating ever-thickening layers of insulation, or the use of certain "green" building materials; those materials are shipped halfway around the world from places where their extraction causes irreparable social and environmental harm. Truly investing in regenerative landscapes means questioning our basic relationships to our environments as well as our socially and culturally conditioned norms of comfort and justice. It means moving away from a paradigm of "extraction" to one of "co-production": We get out what we put in.

Our reliance on wood products for the construction industry is an arena that illustrates the potential of regenerative thinking. In Germany, as in much of the Global North, calls to switch to wood-based (instead of concrete-based) construction have been growing louder and more insistent, even as red tape and entrenched interests make this difficult to execute in practice. Indeed, there is great potential in switching to wood as *the* standard building material in large swaths of Northern Europe, since this can (in theory) enable cities themselves to become carbon sinks (Churkina et al. 2020). However, simply adjusting an existing extractivist worldview to encompass a new raw resource, one which happens to be living, is not what we mean by "regenerative landscape." Trees are not merely raw resources to be mined: they are living beings entangled in ecological networks of such complexity that we have yet to begin fully understanding. Trees are the backbone of bioregions which are inherently local and specific; as such, our territories and human settlements are entangled not only with the trees within our midst, but with the spatially-bounded ecological systems they anchor.

When we imagine Berlin-Brandenburg as a *regenerative* landscape – rather than simply a place in which policies are implemented that encourage construction using wood – we must think about what we can do to nurture the health of the bioregion that in turn nurtures us. We must, for instance, begin thinking about the complex impact of hunting laws: the careful and deliberate control of deer populations, which ensures that fragile young saplings have a chance to grow, has very little to do with the tradition of trophy hunting for sport. We must begin thinking about the regional economic factors that encourage monocultures and the international export of the plant products we do harvest. We must reexamine the regulatory mechanisms that make it difficult, if not impossible, to explore the use of a greater diversity of native species for construction or other needs. We must look critically at our design and planning paradigms to ensure that they are not (willfully) blind. We must understand the need for cultures of democratic negotiation among actors clamoring for use of the same physical space and remain open to creative solutions. And, perhaps most important of all: we must address head-on the culturally specific ways of thinking that keep us from seeing how entangled we *already are*.

Conclusions

The Charter argues that participants in the global building sector must embrace both individual and collective agency: as consumers of resources as well as producers of the most durable artifacts of human culture. The practice of regenerative design, the propagation of circular economic cycles of consumption, together with the sustainable application of renewable, carbon-storing, and bio-based building materials can generate the necessary symbiosis between the health and wellbeing of humanity and that of our terrestrial ecosystems. We have no other option: we *must* work effectively to restore the climate while serving to rebalance the growing inequities of human society. Our imaginary favors an "and" rather than "or" relationship between the local and the global: decisive, differentiated local action grounded in a deep understanding of planetary interlinkage. *Towards Re-Entanglement: A Charter for the City and the Earth* remains a live, working document and will continue to evolve along two trajectories. In the first, several co-authors are planning to take the document to their own regional contexts and will – in new constellations of local contributors – aim to develop more regionally appropriate versions.

With her relational theory of space, and the continued exploration of new forms of spatialization and spatial figures that emerged in our contemporary, anthropocenic world, Martina Löw offers a diagnostic toolset that helps us to think together conflictual and dysfunctional relations between material/social worlds, and global/local processes. If further iterations of this spatial theory begin to open towards more-than-human agents and forces, I believe the theory might become even more useful to understand our planetary crises, and begin to inform imaginaries and normative frameworks to act for a better future.

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